CLAIMS

1. Apparatus for the storage of a protein (20) comprising a first compartment (30) for storing the protein (20) and a second compartment (40) for storing an alkaline buffer (50), the second compartment (40) being in fluid communication with the first compartment (30).

2. Apparatus according to claim 1, wherein the alkaline buffer (50) contains calcium ions.

3. Apparatus according to claim 1 or 2, wherein the alkaline buffer (50) is selected from the group of alkaline buffers including ammonia solutions, ammonium acetate, ammonium formate, tris/HCl, HEPES, PIPES, sodium carbonate, potassium carbonate, sodium phosphate, potassium phosphate or a mixture of these.

4. Apparatus according to any of the above claims, wherein the alkaline buffer (50) contains 50-700 mM calcium ions.

5. Apparatus according to any of the above claims, where the alkaline buffer (50) also contains sodium azide.

6. Apparatus according to any of the above claims where at least part of the surface of the inner walls of the first compartment (30) are formed from or coated with a material with low surface energy.

7. Apparatus according to any of the above claims in which the alkaline buffer (50) is in a gaseous form.

8. Apparatus according to any one of claims 1 to 6 in which the alkaline buffer (50) is separated from the protein (20) by a dialysis membrane (60).

9. Apparatus according to any one of the above claims wherein the protein (20) is mixed with an alkaline solution.

10. Apparatus according to the above claims wherein the protein (20) is mixed with at least one alkaline buffer salt or salts.

11. Apparatus according to claim 10, wherein the at least one alkaline buffer salt or salts also contains sodium azide, phenyl thiourea, sodium cyanide or potassium cyanide.

12. Apparatus according to one of any one of claims 9 to 11, wherein the alkaline solution is 0.1 M ammonium hydroxide, ammonium acetate, ammonium formate, ammonium citrate, tris/HCl, PIPES, HEPES, sodium carbonate, potassium carbonate, sodium phosphate, potassium phosphate buffer or a mixture of these buffer with a pH greater than 7.4.

13. Apparatus according to any one of the above claims wherein the pH of the alkaline buffer (50) is greater than 7.4.

14. Apparatus according to any of the above claims wherein the concentration of the alkaline buffer (50) or combined buffers is equal to or greater than 0.025M

15. Apparatus according to any of the above claims wherein the protein (20) is a natural, regenerated or recombinant protein, a mixture of natural proteins, a mixture of regenerated proteins or a mixture of recombinant proteins.

16. Apparatus according to any of the above claims wherein the protein (20) is fibroin or spidroin or a homologue thereof.

17. Apparatus according to any one of the above claims wherein the proteins (20) are repetitive amphiphilic block co-polymeric proteins or protein analogues containing charged groups and which are prepared by chemical synthesis or genetic engineering

18. Method for the storage of a protein (20) comprising
- a first step of placing the protein in a first storage compartment (30);
- a second step of exposing the protein (20) to an alkaline buffer (50); and
- a third step of maintaing the protein (20) in the alkaline environment in the first

storage compartment (30).

19. Method according to claim 18, wherein the period of time for maintaining the protein (20) in the first storage compartment (30) is at least one minute.

20. Method according to claim 18 or 19, wherein the alkaline buffer (50) contains calcium ions.

21. Method according to one of claims 18 to 20, wherein the alkaline buffer (50) is selected from the group of alkaline buffers consisting of ammonia solutions, ammonium acetate, ammonium formate, ammonium citrate Tris/HCl, HEPES, PIPES, sodium carbonate, potassium carbonate, sodium phosphate, potassium phosphate or a mixture of these buffers.

22 Method according to any one of claims 18 to 21, wherein the alkaline buffer contains 50-700 mM calcium ions.

23. Method according to any one of claims 18 to 22 in which the alkaline buffer (50) is in a gaseous form.

24. Method according to any one of claims 18 to 23 in which at least one alkaline buffer salt is added to the protein (20).

25 Method according to claim 24 in which the alkaline buffer salts also contain sodium azide, phenyl thiourea, sodium cyanide or potassium cyanide.

26 Method according to any one of claims 18 to 25, wherein the alkaline buffer (50) is separated from the protein by a dialysis membrane (60).

27 Method according to any one of claims 18 to 26 wherein the pH of the alkaline buffer (50) is greater than 7.4.

28. Method according to any one of claims 18 to 27 wherein the protein (20) is mixed with an alkaline solution prior to storage (50).

29 Method according to any one of claims 18 to 28 wherein the concentration of the alkaline buffer (50) or combined buffers is equal to or greater than 0.025 M.

30 Method according to any of claims 18 to 29 wherein the protein (20) is a natural, regenerated or recombinant protein, a mixture of natural proteins, a mixture of regenerated proteins or a mixture of recombinant proteins.

31. Method according to any of claims 18 to 30 wherein the protein (20) is fibroin or spidroin or a homologue thereof.

33. Method according to any of claims 18 to 31 wherein the proteins (20) are repetitive amphiphilic block co-polymeric proteins or protein analogues containing charged groups and which are prepared by chemical synthesis or genetic engineering